

Q. Please state your full name, title and business address for the Record.

A. William Monaco, P.E. I am the Drinking Water Program Manager, Naval Station Newport Environmental Office, 1 Simonpietri Drive, Newport, RI 02841.

Q. How long have you held this position?

A. I have held this position for seven years, since February 4, 1997.

Q. What is your responsibility as the Drinking Water Program Manager with regards to the Navy Public Water Systems?

A. I am responsible for the planning, organization and direct oversight of all regulatory and water quality issues concerning two Navy Public Water Systems (hereafter NPWS); the United States Navy Fort Adams (hereafter USN FA) System and the United States Navy Naval Station Newport (hereafter USN NSN) System.

Q. What is your educational background and professional qualifications?

A. I have a Bachelor of Science in Civil Engineering with a Minor in Environmental Engineering from Pennsylvania State University. I have earned 12 credits towards a Master of Science in Civil Engineering Water Resources (non-matriculating) from the University of Rhode Island. I am a Registered Professional Environmental Engineer in the State of Rhode Island.

Q. What is the Purpose of your testimony?

A. The purpose of the testimony is to document water quality issues and concerns, specifically Total Trihalomethanes (hereinafter TTHMs), that NPWS have experienced, in part, due to the water quality received from the City of Newport.

Q. Please provide a brief description of Naval Station Newport water treatment and distribution?

A. Water is purchased from the City of Newport and enters the NPWS distribution systems through 14 interconnections metered by City of Newport owned meters, one meter for USN FA and 13 for USN NSN. There are 16 chlorination stations, nine of which are at the interconnections where some of the water is re-chlorinated. The remainder of the water is distributed through the systems and re-chlorinated at the booster stations located further along in the system. The system is a combined potable and fire protection system. The potable water distribution system consists of approximately 60 miles of distribution piping up to 12 inches in diameter, two fire pump stations, two stations with both fire and potable pumping, one elevated tank and four underground storage tanks. Piping materials include approximately 12% ductile iron pipe, 52% cast iron pipe, and 28% asbestos-cement pipe. Chlorination is the only treatment done to the drinking water.

Q. Why does the Navy add chlorine if the City of Newport already chlorinates?

A. The Navy chlorinates the system to maintain residual to the endpoints of the system. At times the water received from the City of Newport is at a residual that will dissipate before reaching the endpoints of the NPWS. This would cause the NPWS to be out of compliance.

Q. Are there any risks or problems associated with chlorinating drinking water?

A. Yes. While disinfection of drinking water is one of the major public health advances in the 20th century, the disinfectant reacts with natural organic and inorganic matter in source water and distribution systems to form Disinfectant Byproducts (hereafter DBPs).

Q. Are there DBPs that are problematic in the NPWS?

A. Yes. While we test for only TTHMs and Haloacidic Acids (five), test results show that TTHMs within the NPWS are elevated.

Q. Why are DBPs problematic?

A. Results from toxicology studies have shown several DBPs in high doses over extended period of time to be carcinogenic in laboratory animals. Also, some DBPs have also been shown to cause adverse reproductive or developmental effects in laboratory animals. Several epidemiological studies have suggested a weak association between certain cancers (e.g., bladder) or reproductive and developmental effects, from exposure to chlorinated surface water.

Q. What are TTHMs?

A. TTHMs are the sum of the concentrations of chloroform, bromodichloromethane, dibromochloromethane, and bromoform. All of which are formed over time when halogens (e.g., Cl₂) react with natural organics and inorganics (TTHM precursors) in source water and distribution systems. TTHM levels will increase as water travels through a distribution system. The amount depends greatly on the quality of the water (including the amount of TTHM precursors) that leaves the treatment plant.

Q. Are TTHM precursors a problem in the NPWS?

A. No In general, TTHM precursors exist in every distribution system and are not a problem in the NPWS. However, in January 2003, the City of Newport received a Notice of Violation (hereafter NOV) for not meeting removal requirements for Total Organic Carbon (hereafter TOC) exiting one of their treatment plants. TOC is a TTHM precursor.

Q. How are TTHMs regulated?

A. EPA set a Maximum Containment Level (hereafter MCL) for TTHMs of 0.08 milligrams per liter (hereafter mg/l) as an annual average. This applies to any community water system that adds a disinfectant to the drinking water during any part of the treatment process. For the NPWS the calculation of results for the annual average began on January 1, 2004, prior to that the MCL was 0.10 mg/l as an annual average.

Q. Have there been any TTHM violations within the NPWS?

A. Yes. In the fourth quarter of 1997 the USN FA System exceeded the TTHMs MCL of 0.10 mg/l as an annual average. For this exceedance the Navy received a NOV from the Rhode Island Department of Health in January 1998.

Q. Are there other concerns with TTHM within the NPWS?

A. Yes. Although both systems have been in compliance since 1997, current sample results indicate that both USN FA and USN NSN systems will be out of compliance in October 2004 when the 4th quarter results are calculated into the annual average. Additionally, if the regulations had changed prior to January 2004 the USN FA system would have been out of compliance for the last eight consecutive quarters, two whole years, and ten out of the last thirteen quarters. The USN NSN system would have been out of compliance five out of the last six quarters and nine times since 1997.

Q. What is the basis for the TTHM problems/concerns?

A. The TTHM levels entering the Navy's systems are already elevated above the MCL at times. Additional monitoring done since the beginning of 2002 show 10 out of 27 random samples of water entering the NPWS (prior to chlorination) exceeded the 0.08 mg/l limit and another six exceeded 0.07 mg/l. Because TTHMs develop as the water moves through the system almost 60% of the random samples we tested would be out of compliance as it reached the end of the NPWS.

From January 2001 to January 2004, the Town of Portsmouth sampled every week at the entry point to their potable water system, only 200 feet from the Lawton Valley Treatment Plant (hereafter LVTP). Their results show that for thirty-two weeks the water tested entering Portsmouth exceeded the 0.08 mg/l limit and an additional twelve weeks exceeded 0.07 mg/l. Therefore, extrapolating from these results, almost 30% of the time over the last three years the water leaving the LVTP was already out of compliance.

An observation can be made from the sample results from the City of Newport's Castle Hill Coast Guard sample site. This sample site is very close to the entry point into the USN FA system and the sample results can be directly correlated to the sample results taken within USN FA system. Since January 2000 the Castle Hill Coast Guard sample site exceeded the 0.08 mg/l limit ten times and exceeded 0.07 mg/l an additional four times. Although these numbers would be averaged with seven other City of Newport sample sites, they make up the entire USN FA system.

Q. What actions has the Navy taken to correct the TTHM problem?

A. The 1998 NOV required the Navy to study the potable water system and determine the reason for the elevated TTHMs. Recommendations from that study prompted the Navy to make changes to the system. Three areas with no demand were cut and capped eliminating dead end areas. The Navy modeled the potable water system using WaterCAD. A Flushing Program and a Valve Exercise Program were established. Several hundred thousand dollars were spent to install a remote chlorine monitoring system at several locations. The new monitoring system will help the Navy more closely monitor the chlorination of the NPWS. In addition to the study, sampling was increased to try to get a better understanding of the problem. The Navy partnered with the City of Newport and would routinely split samples to be able to identify variances in the different certified laboratories. The Navy, Town of Portsmouth and City of Newport shared ideas and sample results to try to isolate and correct the problem.

Q. What effects have these actions had on the TTHM problem?

A. Unfortunately, there has been very little improvement with the TTHM sample results. The extra testing identified the elevated incoming TTHMs.

Q. What other options, if any, has the Navy explored to correct the TTHM problem?

A. The Navy has investigated the possibility of installing inline treatment systems to correct the problem. Budgeting for a million dollars to install these inline treatment systems was initiated in 1999 and is still in progress.

Q. How do problems with TTHMs affect a rate intervention?

A. The Navy is concerned that without proper changes to the City of Newport's current treatment, as stated, we will be out of compliance for TTHMs in October 2004. When we go out of compliance we may be required to install these inline treatment systems and spend millions of dollars on what we feel is a problem that should be fixed at the primary treatment plants and not at the Navy's meter points. I suggest that the problem we have is also a problem for other customers and should be looked at and corrected before this Commission grants any rate increase.